

CLAIMS

1. An isolated nucleic acid comprising a nucleotide sequence encoding an *S. pneumoniae* polypeptide selected from the group consisting of SEQ ID NO: 2604 - SEQ
5 ID NO: 5206.
2. A recombinant expression vector comprising the nucleic acid of claim 1 operably linked to a transcription regulatory element.
- 10 3. A cell comprising a recombinant expression vector of claim 2.
4. A method for producing an *S. pneumoniae* polypeptide comprising culturing a cell of claim 3 under conditions that permit expression of the polypeptide.
- 15 5. An isolated nucleic acid comprising a nucleotide sequence encoding an *S. pneumoniae* polypeptide or a fragment thereof, said nucleic acid selected from the group consisting of SEQ ID NO: 1 - SEQ ID NO: 2603.
6. A recombinant expression vector comprising the nucleic acid of claim 5
20 operably linked to a transcription regulatory element.
7. A cell comprising a recombinant expression vector of claim 6.
8. A method for producing an *S. pneumoniae* polypeptide comprising culturing a cell of claim 7 under conditions that permit expression of the polypeptide.
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9. A probe comprising a nucleotide sequence consisting of at least 8 nucleotides of a nucleotide sequence selected from the group consisting of SEQ ID NO:
30 1 - SEQ ID NO: 2603.
10. An isolated nucleic acid comprising a nucleotide sequence of at least 8 nucleotides in length, wherein the sequence is hybridizable to a nucleic acid having a

nucleotide sequence selected from the group consisting of SEQ ID NO: 1 - SEQ ID NO: 2603.

11. A vaccine composition for prevention or treatment of an *S. pneumoniae* infection comprising an effective amount of a nucleic acid of claim 5.

12. A vaccine composition of claim 11, further comprising a pharmaceutically acceptable carrier.

10 13. A vaccine composition of claim 12, wherein the pharmaceutically acceptable carrier is an adjuvant.

14. A method of treating a subject for *S. pneumoniae* infection comprising administering to a subject a vaccine composition of claim 11, such that treatment of *S. 15 pneumoniae* infection occurs.

15. A method of claim 14, wherein the treatment is a prophylactic treatment.

20 16. A method of claim 14, wherein the treatment is a therapeutic treatment.

17. A recombinant or substantially pure preparation of an *S. pneumoniae* polypeptide or a fragment thereof, wherein said polypeptide is selected from the group consisting of SEQ ID NO: 2604 - SEQ ID NO: 5206.

25 18. A vaccine composition for prevention or treatment of an *S. pneumoniae* infection comprising an effective amount of an *S. pneumoniae* polypeptide of claim 17.

19. A vaccine composition of claim 18, further comprising a pharmaceutically acceptable carrier.

20. A vaccine composition of claim 19, wherein the pharmaceutically acceptable carrier is an adjuvant.

21. A method of treating a subject for *S. pneumoniae* infection comprising
5 administering to a subject a vaccine composition of claim 18, such that treatment of *S. pneumoniae* infection occurs.

22. A method of claim 21, wherein the treatment is a prophylactic treatment.

10 23. A method of claim 21, wherein the treatment is a therapeutic treatment.

24. A method for detecting the presence of a Streptococcus nucleic acid in a sample comprising:

- (a) contacting a sample with a nucleic acid of claim 5 under
15 conditions in which a hybrid can form between the probe and a Streptococcus nucleic acid in the sample; and
(b) detecting the hybrid formed in step (a), wherein detection of a hybrid indicates the presence of a Streptococcus nucleic acid in the sample.

20 25. A computer readable medium having recorded thereon the nucleotide sequences depicted in SEQ ID NO: 1 - SEQ ID NO: 2603 or fragments thereof.

26. A computer based system for identifying fragments of the *Streptococcus* genome of commercial importance comprising the following elements;

- 25 a) a data storage means comprising the nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 2603 or fragments thereof,
b) a search means for comparing a target sequence to the nucleotide sequences of the data storage means of step (a) to identify homologous sequences, and;
c) a retrieval means for obtaining said homologous sequences(s) of
30 step (b).

27. A method of identifying commercially important nucleic acid fragments of the *Streptococcus* genome comprising the step of comparing a database comprising the nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 2603 or fragments thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary 5 nucleotide sequence to said target sequence, wherein said target sequence is not randomly selected.

28. A method for identifying an expression modulating fragment of the *Streptococcus* genome comprising the step of comparing a database comprising the 10 nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 2603 or fragments thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide sequence to said target sequence, wherein said target sequence comprises sequences known regulate gene expression.